

WHAT IS CLAIMED IS

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1. An image decompressing method comprising  
the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to

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10   which decomposition-level-type inverse wavelet transform
    is performed; and

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c) decompressing given wavelet transform coefficients up to the decomposition level determined by said step b),

15            wherein said step b) determines the  
decomposition level such that the wavelet transform  
coefficients in the thus-determined decomposition level  
have a size equal to or nearest to the size of the  
decomposed image determined by said step a).

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2. The method as claimed in claim 1, wherein

25 the decomposition level determined by said step b) is

such that the size of the wavelet transform coefficients of the thus-determined decomposition level is immediately smaller than the size of decompressed image determined by said step a).

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3. The method as claimed in claim 1, wherein  
10 the decomposition level determined by said step b) is such that the size of the wavelet transform coefficients of the thus-determined decomposition level is immediately larger than the size of decompressed image determined by said step a).

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4. The method as claimed in claim 1, further  
20 comprising the step d) of performing size-change operation on the decompressed image obtained by said step c) so as to obtain an image having a size equal to the size determined by said step a).

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5. The method as claimed in claim 1, wherein  
the wavelet transform coefficients to be decompressed by  
said step c) comprise a code stream coded in accordance  
with JPEG2000, Image Coding System (ISO/IEC, FCD 15444-  
5 1).

10 6. The method as claimed in claim 4, further  
comprising the step e) of performing interpolation  
operation so as to obtain a bitmap image having the size  
equal to the size determined by said step a) from the  
size-changed image obtained by said step d).

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7. The method as claimed in claim 6, wherein  
20 said step e) comprises the step of performing linear  
interpolation.

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8. The method as claimed in claim 6, wherein said step e) comprises the step of using pixel values of pixels near pixels included in the decompressed image.

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9. An image decompressing method comprising the steps of:

10 a) determining a size of a decompressed image;  
b) determining a decomposition level up to which decomposition-level-type inverse subband transform is performed; and

c) decompressing given subband transform  
15 coefficients up to the decomposition level determined by said step b),

wherein said step b) determines the decomposition level such that subband transform coefficients in the thus-determined decomposition level  
20 have a size equal to or nearest to the size of the decomposed image determined by said step a).

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10. The method as claimed in claim 9, wherein the decomposition level determined by said step b) is such that the size of the subband transform coefficients of the thus-determined decomposition level is  
5 immediately smaller than the size of decompressed image determined by said step a).

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11. The method as claimed in claim 9, wherein the decomposition level determined by said step b) is such that the size of the subband transform coefficients of the thus-determined decomposition level is  
15 immediately larger than the size of decompressed image determined by said step a).

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12. The method as claimed in claim 9, further comprising the step d) of performing size-change operation on the decompressed image obtained by said step c) so as to obtain an image having a size equal to  
25 the size determined by said step a).

13. The method as claimed in claim 12,  
further comprising the step e) of performing  
interpolation operation so as to obtain a bitmap image  
having the size equal to the size determined by said  
5 step a) from the size-changed image obtained by said  
step d).

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14. The method as claimed in claim 13,  
wherein said step e) comprises the step of performing  
linear interpolation.

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15. The method as claimed in claim 13,  
wherein said step e) comprises the step of using pixel  
20 values of pixels near pixels included in the  
decompressed image.

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16. An image decompressing method comprising the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to  
5 which decomposition-level-type inverse wavelet transform is performed; and

c) decompressing given wavelet transform coefficients up to the decomposition level determined by said step b),

10 wherein said step b) determines the decomposition level such that the wavelet transform coefficients in the thus-determined decomposition level have a size further smaller than the size of the wavelet transform coefficients in the decomposition level  
15 immediately smaller than the size of the decomposed image determined by said step a).

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17. The method as claimed in claim 16, further comprising the step d) of producing a lower-frequency component from the LL-subband coefficients in the last decomposition level when the size determined by  
25 said step a) is smaller than the size of said LL subband

coefficients in the last decomposition level.

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18. The method as claimed in claim 17,  
wherein said step d) comprises the step utilizing the  
decomposition-level-type wavelet transform formula used  
in the relevant system as it is.

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19. The method as claimed in claim 17,  
15 wherein said step d) comprises the step of averaging  
adjacent pixels

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20. The method as claimed in claim 16,  
further comprising the step d) of performing size-change  
operation on the decompressed image obtained by said  
step c) so as to obtain an image having a size equal to  
25 the size determined by said step a).



21. The method as claimed in claim 20,  
further comprising the step e) of performing  
interpolation operation so as to obtain a bitmap image  
having the size equal to the size determined by said  
5 step a) from the size-changed image obtained by said  
step d).

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22. The method as claimed in claim 16,  
wherein the wavelet transform coefficients to be  
decompressed by said step c) comprise a code stream  
coded in accordance with JPEG2000, Image Coding System  
15 (ISO/IEC, FCD 15444-1).

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23. An image decompressing method comprising  
the steps of:

- a) determining a size of a decompressed image;
- b) determining a decomposition level up to  
which decomposition-level-type inverse subband transform  
25 is performed; and

c) decompressing given subband transform coefficients up to the decomposition level determined by said step b),

wherein said step b) determines the  
5 decomposition level such that subband transform coefficients in the thus-determined decomposition level have a size further smaller than the size of the subband transform coefficients in the decomposition level immediately smaller than the size of the decomposed  
10 image determined by said step a).

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15 24. The method as claimed in claim 23, further comprising the step d) of producing a lower-frequency component from LL-subband coefficients in the last decomposition level when the size determined by said step a) is smaller than the size of said LL-subband  
20 coefficient in the last decomposition level.

25 25. The method as claimed in claim 24,

wherein said step d) comprises the step of utilizing the decomposition-level-type wavelet transform formula used in the relevant system as it is.

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26. The method as claimed in claim 24,  
wherein said step d) comprises the step of averaging  
10 adjacent pixels

27. The method as claimed in claim 23,  
further comprising the step d) of performing size-change  
operation on the decompressed image obtained by said  
step c) so as to obtain an image having a size equal to  
the size determined by said step a).

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28. The method as claimed in claim 27,  
25 further comprising the step e) of performing

interpolation operation so as to obtain a bitmap image having the size equal to the size determined by said step a) from the size-changed image obtained by said step d).

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29. An image decompressing apparatus
- 10 comprising:
- a size determining part determining a size of a decompressed image;
  - a level determining part determining a decomposition level up to which decomposition-level-type
  - 15 inverse wavelet transform is performed; and
  - a decompressing part decompressing given wavelet transform coefficients up to the decomposition level determined by said level determining part,
- 20 wherein said level determining part determines the decomposition level such that wavelet transform coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said size determining part.

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30. The apparatus as claimed in claim 29,  
wherein the decomposition level determined by said level  
determining part is such that the size of the wavelet  
transform coefficients of the thus-determined  
5 decomposition level is immediately smaller than the size  
of decompressed image determined by said size  
determining part.

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31. The apparatus as claimed in claim 29,  
wherein the decomposition level determined by said level  
determining part is such that the size of the wavelet  
15 transform coefficients of the thus-determined  
decomposition level is immediately larger than the size  
of decompressed image determined by said size  
determining part.

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32. The apparatus as claimed in claim 29,  
further comprising a size-change part performing size-  
25 change operation on the decompressed image obtained by

said decompressing part so as to obtain an image having  
a size equal to the size determined by said size  
determining part.

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33. The apparatus as claimed in claim 29,  
wherein the wavelet transform coefficients to be  
10 decompressed by said step c) comprise a code stream  
coded in accordance with JPEG2000, Image Coding System  
(ISO/IEC, FCD 15444-1).

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34. The apparatus as claimed in claim 32, further comprising an interpolation part performing interpolation operation so as to obtain a bitmap image having the size equal to the size determined by said size determining part from the size-changed image obtained by said size-change part.

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coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said size determining part.

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38. The apparatus as claimed in claim 37,  
10 wherein the decomposition level determined by said level determining part is such that the size of the subband transform coefficients of the thus-determined decomposition level is immediately smaller than the size  
15 of decompressed image determined by said size determining part.

39. The apparatus as claimed in claim 37,  
20 wherein the decomposition level determined by said level determining part is such that the size of the subband transform coefficients of the thus-determined decomposition level is immediately larger than the size  
25 of decompressed image determined by said size



determining part.

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40. The apparatus as claimed in claim 37,  
further comprising a size-change part performing size-  
change operation on the decompressed image obtained by  
said decompressing part so as to obtain an image having  
10 a size equal to the size determined by said size  
determining part.

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41. The apparatus as claimed in claim 40,  
further comprising an interpolation part performing  
interpolation operation so as to obtain a bitmap image  
having the size equal to the size determined by said  
20 size determining part from the size-changed image  
obtained by said size-change part.

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42. The apparatus as claimed in claim 41,  
wherein said interpolation part performs linear  
interpolation.

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43. The apparatus as claimed in claim 41,  
wherein said interpolation part uses pixel values of  
10 pixels near pixels included in the decompressed image.

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44. An image decompressing apparatus  
comprising:

a size determining part determining a size of  
a decompressed image;

a level determining part determining a  
20 decomposition level up to which decomposition-level-type  
inverse wavelet transform is performed; and

a decompressing part decompressing given  
wavelet transform coefficients up to the decomposition  
level determined by said level determining part,

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wherein said level determining part determines

the decomposition level such that wavelet transform  
coefficients in the thus-determined decomposition level  
have a size further smaller than the size of the  
decomposition level immediately smaller than the size of  
5 the decomposed image determined by said size determining  
part.

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45. The apparatus as claimed in claim 44,  
further comprising a lower-frequency component producing  
part producing a lower-frequency component from the LL  
subband coefficients in the last decomposition level  
15 when the size determined by said step a) is smaller than  
the size of said LL subband in the last decomposition  
level.

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46. The apparatus as claimed in claim 45,  
wherein said lower-frequency component producing part  
utilizes the decomposition-level-type wavelet transform  
25 formula used in the relevant system as it is.

47. The apparatus as claimed in claim 45,  
wherein said lower-frequency component producing part  
takes averages of adjacent pixels

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48. The apparatus as claimed in claim 44,  
further comprising a size-change part performing size-  
10 change operation on the decompressed image obtained by  
said decompressing part so as to obtain an image having  
a size equal to the size determined by said size  
determining part.

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49. The apparatus as claimed in claim 48,  
further comprising an interpolation part performing  
20 interpolation operation so as to obtain a bitmap image  
having the size equal to the size determined by said  
size determining part from the size-changed image  
obtained by said size-change part.

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50. The apparatus as claimed in claim 44,  
wherein the wavelet transform coefficients to be  
decompressed by said decompressing part comprise a code  
stream coded in accordance with JPEG2000, Image Coding  
5 System (ISO/IEC, FCD 15444-1).

10 51. An image decompressing apparatus  
comprising:  
a size determining part determining a size of  
a decompressed image;  
a level determining part determining a  
15 decomposition level up to which decomposition-level-type  
inverse subband transform is performed; and  
a decompressing part decompressing given  
subband transform coefficients up to the decomposition  
level determined by said level determining part,  
20 wherein said level determining part determines  
the decomposition level such that subband transform  
coefficients in the thus-determined decomposition level  
have a size further smaller than the size of the  
decomposition level immediately smaller than the size of  
25 the decomposed image determined by said size determining

part.

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52. The apparatus as claimed in claim 51,  
further comprising a lower-frequency component producing  
part producing a lower-frequency component from the LL  
subband coefficients in the last decomposition level  
10 when the size determined by said size determining part  
is smaller than the size of said LL subband of the last  
decomposition level.

15

53. The apparatus as claimed in claim 52,  
wherein said lower-frequency component producing part  
utilizes the decomposition-level-type wavelet transform  
20 formula used in the relevant system as it is.

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54. The apparatus as claimed in claim 52,

wherein said lower-frequency component producing part takes averages of adjacent pixels.

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55. The apparatus as claimed in claim 51, further comprising a size-change part performing size-change operation on the decompressed image obtained by  
10 said decompressing part so as to obtain an image having a size equal to the size determined by said size determining part.

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56. The apparatus as claimed in claim 55, further comprising an interpolation part performing interpolation operation so as to obtain a bitmap image  
20 having the size equal to the size determined by said size determining part from the size-changed image obtained by said size-change part.

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57. An information recording medium recording therein a software program for causing a computer to execute the steps of:

a) determining a size of a decompressed image;

5           b) determining a decomposition level up to  
which decomposition-level-type inverse wavelet transform  
is performed; and

c) decompressing given wavelet transform  
coefficients up to the decomposition level determined by  
10 said step b),

wherein said step b) determines the decomposition level such that wavelet transform coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said step a).

20                    58. An information recording medium recording  
therein a software program for causing a computer to  
execute the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to  
25 which decomposition-level-type inverse subband transform



is performed; and

c) decompressing given subband transform coefficients up to the decomposition level determined by said step b),

5                wherein said step b) determines the decomposition level such that subband transform coefficients in the thus-determined decomposition level have a size equal to or nearest to the size of the decomposed image determined by said step a).

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59. An information recording medium recording  
15        therein recording therein a software program for causing a computer to execute the steps of:

a) determining a size of a decompressed image;

b) determining a decomposition level up to  
which decomposition-level-type inverse wavelet transform  
20        is performed; and

c) decompressing given wavelet transform coefficients up to the decomposition level determined by said step b),

               wherein said step b) determines the  
25        decomposition level such that wavelet transform

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coefficients in the thus-determined decomposition level  
have a size further smaller than the size of the wavelet  
transform coefficients in the decomposition level  
immediately smaller than the size of the decomposed  
5 image determined by said step a).

10 60. An information recording medium recording  
therein a software program for causing a computer to  
execute the steps of:

a) determining a size of a decompressed image;  
b) determining a decomposition level up to  
15 which decomposition-level-type inverse subband transform  
is performed; and

c) decompressing given subband transform  
coefficients up to the decomposition level determined by  
said step b),

20 wherein said step b) determines the  
decomposition level such that subband transform  
coefficients in the thus-determined decomposition level  
have a size further smaller than the size of the subband  
transform coefficients in the decomposition level  
25 immediately smaller than the size of the decomposed

image determined by said step a).

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